

Balloon Rocket Lab
Honors Physics

20 Points Total

Instructions:

1. Attach the balloon to the straw, and place the fishing line through the straw.
2. Pull the string tight, blow up the balloon, and release balloon.
3. Measure the x-displacement and time of the balloon.
4. Repeat for seven trials.
5. Calculate acceleration and force.

Hints:

1. Think about the x- and y-directions independently, and determine whether the balloon is in equilibrium or non-equilibrium in each direction.
2. For the force calculation, you will need to measure the mass of the balloon.
3. Take as accurate of measurements of time and displacement as possible, because the acceleration calculation depends heavily on those two measurements.
4. It will be necessary to calculate acceleration for each trial, but you may take an average acceleration (watch out for outlier data points!) to use in the force calculation.

Rubric:

1. Procedure (3).
2. Data table (3). Columns to have: Time, X-Displacement.
3. Calculations for acceleration and force (4). Show one full calculation for each of acceleration and force, and use the equations to complete the data.
4. Draw and fully label a free-body diagram of the balloon releasing air. (3).
5. Sources of error and ways to minimize (4; 2 each).
6. Conclusions (3).